CLAIMS

We claim:

1. A magnetic head, comprising:

a first rowbar substrate having a transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the first rowbar substrate, said thin film transducer forming a portion of said transducing surface; and

a first closure covering said thin film transducer on a side thereof opposite said gap surface of said first rowbar substrate, said first closure forming a portion of the transducing surface, wherein said first closure is formed of a layer having a thickness in the range of 0.1-200 microns.

2. The magnetic head recited in claim 1, wherein the first closure is chosen from a group of materials consisting of Al-Fe-Si, Al-O-Ti-C, Zr-O-Ti, Si-N, Si-C and Zr-O.

3. The magnetic head recited in claim 1, wherein the first closure is made of a deposited layer of Al-Fe-Si.

4. The magnetic head recited in claim 1, wherein the first closure is made of a conductive material.

5. The magnetic head recited in claim 1, further comprising:

a second rowbar substrate having a transducing surface, a gap surface, at least one thin film transducer on the gap surface, said thin film transducer forming a portion of said transducing

surface, and a second closure covering said thin film transducer on a side thereof opposite said gap surface of said second rowbar substrate wherein said second closure is formed of a layer having a thickness in the range of 0.1-200 microns; and

wherein said second closure is opposite to, spaced from and facing said first closure.

6. The magnetic head recited in claim 5, wherein said transducing surfaces of said first and second rowbar substrates are sloped downward and away from each other so as to form a wrap angle at each said gap surface thereof.

7. The magnetic head recited in claim 6, further comprising:

a carrier mounting said first and second rowbar substrates.

8. A magnetic head, comprising:

a first rowbar substrate having a flat transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the first rowbar substrate, said thin film transducer forming a portion of said flat transducing surface; and

a first closure covering said thin film transducer on a side thereof opposite said gap surface of said first rowbar substrate, said first closure forming a portion of the flat transducing surface, wherein said first closure is formed of a layer having a thickness in the range of 0.1-200 microns.

9. The magnetic head recited in claim 8, further comprising:

a second rowbar substrate having a flat transducing surface, a gap surface, at least one thin film transducer on the gap surface, said thin film transducer forming a portion of said flat transducing surface, and a second closure covering said thin film transducer on a side thereof opposite said gap surface of said second rowbar substrate wherein said second closure is formed of a layer having a thickness in the range of 0.1-200 microns; and

wherein said second closure is opposite to, spaced from and facing said first closure.

10. A magnetic head comprising:

a rowbar substrate having a transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the substrate, said thin film transducer forming a portion of said transducing surface; and

a closure covering said thin film transducer on a side thereof opposite said gap surface of said first rowbar substrate, said closure forming a further portion of the transducing surface;

wherein said transducing surface has a compression zone at the outside edge region of the closure, a tack-down zone and a canopy zone said canopy zone being between said tack-down zone and said compression zone; and

said thin film transducer is located in the compression zone on said transducing surface.

11. The magnetic head recited in claim 10, wherein the closure has a thickness in the range of 0.1 to 10 microns.

12. The magnetic head recited in claim 10, wherein the closure is chosen from a group of materials consisting of Al-Fe-Si, Al-O-Ti-C, Zr-O-Ti, Si-N, Si-C and Zr-O.

13. The magnetic head recited in claim 10, wherein the closure is made of a conductive material.

14. A magnetic head comprising:

a rowbar substrate having a transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the substrate, said thin film transducer forming a portion of said transducing surface; and

a closure covering said thin film transducer on a side thereof opposite said gap surface of said substrate, said closure forming a portion of the transducing surface;

wherein said transducing surface has a compression zone at the outside edge region of the closure, a tack-down zone and a canopy zone, said canopy zone being between said compression zone and said tack-down zone; and

said thin film transducer is located in the canopy zone on said transducing surface.

15. The magnetic head recited in claim 14, wherein the closure is chosen from a group of materials consisting of Al-Fe-Si, Al-O-Ti-C, Zr-O-Ti, Si-N, Si-C and Zr-O.

16. The magnetic head recited in claim 14, wherein the closure has a thickness in the range of 10-200 microns.

17. The magnetic head recited in claim 14, wherein the closure is made of a conductive material.

18. A magnetic tape recorder system, comprising:

a magnetic recording tape;

a tape drive for moving the magnetic recording tape linearly and bi-directionally;

a magnetic head for magnetically recording data on the magnetic recording tape and for sensing magnetically recorded data on the magnetic recording tape, said magnetic head comprising:

a first rowbar substrate having a transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the substrate, said thin film transducer forming a portion of said transducing surface; and

a first closure covering said thin film transducer on a side thereof opposite said gap surface of said substrate, said first closure forming a portion of the transducing surface, wherein said first closure is formed of a layer having a thickness in the range of 0.1-200 microns; and

an actuator for positioning said magnetic head to access various tracks on the magnetic recording tape; and

a read/write channel coupled electrically to the magnetic head for magnetically recording data on the magnetic recording tape and for reading data recorded on the magnetic recording tape.

19. The magnetic tape recorder system recited in claim 18, wherein the first closure is chosen from a group of materials consisting of Al-Fe-Si, Al-O-Ti-C, Zr-O-Ti, Si-N, Si-C and Zr-O.

20. The magnetic tape recorder system recited in claim 18, wherein the first closure is made of a conductive material.

21. The magnetic tape recorder system recited in claim 18, further comprising:

a second rowbar substrate having a transducing surface, a gap surface, at least one thin film transducer on the gap surface, said thin film transducer forming a portion of said transducing surface, and a second closure covering said thin film transducer on a side thereof opposite said gap surface of said second rowbar substrate wherein said second closure is formed of a layer having a thickness in the range of 0.1-200 microns; and

wherein said second closure is opposite to, spaced from and facing said first closure.

22. A magnetic tape recorder system, comprising:

a magnetic recording tape;

a tape drive for moving the magnetic recording tape linearly and bi-directionally;

a magnetic head for magnetically recording data on the magnetic recording tape and for sensing magnetically recorded data on the magnetic recording tape, said magnetic head comprising:

a rowbar substrate having a transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the substrate, said thin film transducer forming a portion of said transducing surface;

a closure covering said thin film transducer on a side thereof opposite said gap surface of said substrate, said closure forming a portion of the transducing surface;

wherein said transducing surface has a compression zone at the outside edge region of the closure, a tack-down zone and a canopy zone, said canopy zone being between the compression zone and the tack-down; and

said thin film transducer is located in the compression zone on said transducing surface;

an actuator for positioning said magnetic head to access various tracks on the magnetic recording tape; and

a read/write channel coupled electrically to the magnetic head for magnetically recording data on the magnetic recording tape and for reading data recorded on the magnetic recording tape.

23. The magnetic tape recorder system recited in claim 22, wherein the closure is chosen from a group of materials consisting of Al-Fe-Si, Al-O-Ti-C, Zr-O-Ti, Si-N, Si-C and Zr-O.

24. The magnetic tape recorder system recited in claim 22, wherein the closure has a thickness in the range of 0.1-10 microns.

25. The magnetic tape recorder system recited in claim 22, wherein the closure is made of a conductive material.

26. A magnetic tape recorder system, comprising:

a magnetic recording tape;

a tape drive for moving the magnetic recording tape linearly and bi-directionally;

a magnetic head for magnetically recording data on the magnetic recording tape and for sensing magnetically recorded data on the magnetic recording tape, said magnetic head comprising:

a rowbar substrate having a transducing surface and a gap surface;

at least one thin film transducer on the gap surface of the substrate, said thin film transducer forming a portion of said transducing surface;

a closure covering said thin film transducer on a side thereof opposite said gap surface of said substrate, said closure forming a portion of the transducing surface;

wherein said transducing surface has a compression zone at the outside edge region of the closure, a tack-down zone and a canopy zone, said canopy zone being between the compression zone and the tack-down; and

said thin film transducer is located in the canopy zone on said transducing surface;

an actuator for positioning said magnetic head to access various tracks on the magnetic recording tape; and

a read/write channel coupled electrically to the magnetic head for magnetically recording data on the magnetic recording tape and for reading data recorded on the magnetic recording tape.

27. The magnetic tape recorder system recited in claim 26, wherein the closure is chosen from a group of materials consisting of Al-Fe-Si, Al-O-Ti-C, Zr-O-Ti, Si-N, Si-C and Zr-O.

28. The magnetic tape recorder system recited in claim 26, wherein the closure has a thickness in the range of 10-200 microns.

29. The magnetic tape recorder system recited in claim 26, wherein the closure is made of a conductive material.